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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/531,477	04/15/2005	Piotr Kula	122041	6504

  

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EXAMINER	
ZHU, WEIPING	

  

ART UNIT	PAPER NUMBER
1793	

  

MAIL DATE	DELIVERY MODE
01/17/2008	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/531,477	<b>Applicant(s)</b> KULA ET AL.	
	<b>Examiner</b> Weiping Zhu	<b>Art Unit</b> 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 14 January 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 2-6 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 2-6 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Status of Claims***

1. Claims 2-6 are currently under examination, wherein all the claims have been newly added in applicant's amendment filed on November 15, 2007. The original claim 1 has been cancelled in the same amendment.

### ***Status of Previous Rejections***

2. The previous rejection of claim 1 under 35 U.S.C. 103(a) as being unpatentable over Kubota (US 5,702,540) in view of Stickels et al. (US 4,191,599) as stated in the Office action dated August 17, 2007 has been withdrawn in light of applicant's amendment filed on November 15, 2007. The new ground(s) of rejections of claims 2-6 have been established as follows:

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 2-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kubota ('540) in view of Stickels et al. ('599).

With respect to claim 2, Kubota ('540) discloses a method of vacuum carburizing (i.e. the under-pressure carburizing as claimed) of steel workpieces comprising introducing an active nitrogen carrier into the vacuum furnace chamber until the pressure of  $\leq 1$  kPa (i.e. 10 mbar) is reached (col. 3, lines 10-36) and introducing a carbon carrier into the vacuum furnace chamber when the carburizing temperature is

reached (col. 7, lines 35-43). The pressure range of Kubota ('540) overlaps the claimed pressure range. A prima facie case of obviousness exists. See MPEP 2144.05 I. It would have been obvious to one of ordinary skill in the art at the time the invention was made to select the claimed range within the disclosed range of Kubota ('540) with expected success, because Kubota ('540) discloses the same utility over the entire disclosed range.

Kubota ('540) does not specify the temperatures at which the ammonia is introduced and stopped to be introduced into the vacuum carburizing chamber as claimed. However, it is well held that discovering an optimum value of a result-effective variable involves only routine skill in the art. In re Boesch, 617, F.2d 272, 205 USPQ 215 (CCPA 1980). In the instant case, the temperatures at which the ammonia is introduced and stopped to be introduced into the vacuum carburizing chamber are result-effective variables, because they would directly affect the nitrogen content, nitrogen penetration depth and the resulting residual compressive stress in the surface region of the steel workpiece as disclosed by Stickels et al. ('599) (col. 1, lines 5-48). See MPEP 2144.05 II. It would have been obvious to one of ordinary skill in the art at the time the invention was made to optimize the nitriding temperature range in order to achieve the desired nitrogen content, nitrogen penetration depth and the resulting residual compressive stress in the surface region of the steel workpiece.

With respect to claims 3 and 4, Kubota ('540) discloses that ammonia gas can be added as a gaseous nitrogen source in addition to the carburizing gas, which reads on the claimed features of the instant claims 3 and 4.

With respect to claim 5, Kubota ('540) discloses that ethylene or acetylene can be used as a carburizing gas (col. 4, lines 33-40), which reads on the claimed feature of the instant claim 5.

With respect to claim 6, Kubota ('540) discloses a carburizing temperature of 930°C (col. 9, lines 7-18), which is close to the claimed lowest temperature of 950°C. A prima facie case of obviousness exists. See MPEP 2144.05 I.

### ***Response to Arguments***

4. The applicant's arguments filed on November 5, 2007 have been fully considered but they are not persuasive.

The applicant argues that Kubota ('540) does not disclose introducing an active nitrogen carrier only when the temperature is between 400°C and the carburizing temperature; stopping the nitrogen carrier introduction when the carburizing temperature is reached and thereafter introducing only the carbon carrier. In response, see the rejection of claim 2 above. The examiner notes that the rejection was based on the prior art's broad disclosure rather than preferred embodiments. See MPEP 2123. As stated in the paragraph above, it would have been obvious to one of ordinary skill in the art at the time the invention was made to optimize the nitriding starting and stopping temperatures, which could be close to the claimed temperature range, in order to achieve the desired nitrogen content, nitrogen penetration depth and the resulting residual compressive stress in the surface region of the steel workpiece. See MPEP 2144.05 II.

### ***Conclusion***

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Weiping Zhu whose telephone number is 571-272-6725. The examiner can normally be reached on 8:30-16:30 Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on 571-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

WZ

1/14/2008

  
**ROY KING**  
**SUPERVISORY PATENT EXAMINER**  
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